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A new approach of recognition of ellipsoidal micro- and nanoparticles on AFM images and determination of their sizes

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Abstract

© 2016 IOP Publishing Ltd.In this work we develop an approach of automatic recognition of ellipsoidal particles on the atomic force microscopy (AFM) image and determination of their size, which is based on image segmentation and the surface approximation by ellipsoids. In addition to the comparative simplicity and rapidity of processing, this method allows us to determine the size of particles, the surface of which is not completely visible on the image. The proposed method showed good results on simulated images including noisy ones. Using this algorithm the size distributions of silica particles on experimental AFM images have been determined.

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Keywords

atomic force microscopy, image segmentation, particle detection, size determination